

ORIGINAL ARTICLE

Neuro-otological symptoms in patients with migraine

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KEYWORDS

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Abstract

Introduction: Neurootological symptoms are common in patients with migraine, and have been reported to be associated with diverse conditions.

Patients and methods: A total of 70 patients with a diagnosis of episodic migraine, with or without aura, attending our Migraine Unit were selected. The specific variables studied were the diagnosis of instability, psycho-physiological dizziness, presyncopal symptoms, benign paroxysmal positional vertigo (BPPV), migraine associated recurrent vertigo (MARV), and Meniere's disease.

Results: A total of 44.3% of cases had orthostatism or syncope, 15.7% with instability (possibly due to bilateral vestibular hypofunction), 14.2% with MARV and 8.6% with BPPV. The presence of BPPV was observed in older patients (40 years), whilst MARV was a condition seen in younger ones (35 years). These findings are of interest and remind us that benign paroxysmal vertigo is a childhood condition and age is a risk for BPPV.

Conclusions: Migraine patients often present with neuro-otological symptoms that can be classified as inter-episodic and episodic symptoms, and specific and non-specific migraine symptoms. This approach is of obvious pathophysiological interest, given that MARV and the possible vestibular hypofunction of migraine patients are symptoms that share physiological aspects with migraine, while the orthostatism symptoms and BPPV are non-specific and are seen to be associated with other conditions.

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PALABRAS CLAVE

Migraña;
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Mareo;
Síntomas
neurootológicos

Síntomas neurootológicos en pacientes con migraña**Resumen**

Introducción: La frecuencia de los síntomas neurootológicos son frecuentes en los pacientes con migraña, habiéndose descrito la asociación de diversas entidades.

Pacientes y métodos: Seleccionamos de la unidad de cefaleas a 70 pacientes con diagnóstico de migraña episódica con o sin aura y valoramos específicamente el diagnóstico de inestabilidad, mareo psicofisiológico, síntomas presincopales, vértigo posicional paroxístico benigno (VPPB), vértigo recurrente asociado a la migraña (VRAM) y la Meniere's disease.

Resultados: Un 44,3% presentó ortostatismo o síncope, un 15,7% inestabilidad posiblemente por hipofunción vestibular bilateral, un 14,2% VRAM y un 8,6% VPPB. La presencia de VPPB la hemos observado en pacientes de mayor edad (40 años), mientras que el VRAM es una entidad de más jóvenes (35 años). Estos hallazgos nos llaman la atención y nos recuerdan cómo el vértigo benigno paroxístico es una entidad de la infancia y para el VPPB la edad es un factor de riesgo.

Conclusiones: Los migrañosos presentan con frecuencia síntomas neurootológicos que podemos clasificar en síntomas interepisódicos y episódicos, y síntomas específicos e inespecíficos de la migraña. Esta aproximación tiene un evidente interés fisiopatológico dado que tanto el VRAM como la posible hipofunción vestibular de los migrañosos son síntomas que comparten aspectos fisiopatológicos con la migraña, mientras que los síntomas de ortostatismo y el VPPB son inespecíficos y se observan asociados a otras entidades.

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Introduction

Dizziness and instability are highly prevalent pathologies at Neurology out-patient clinics. For some years we have had the sensation that these symptoms present a higher incidence in patients with migraine. This relationship possibly entails pathophysiological and therapeutic implications. In children, we can see the presence of benign recurrent vertigo as a cyclical syndrome of childhood. In this sense, a clear increase in the incidence of vertigo and instability has been observed in different series of patients with migraine. Many of these situations, due to their cyclical nature and their association with migraine sufferers, could be classified as adult cyclical syndromes. The classical literature describes an association with different types of recurrent vertigos, even with Meniere's disease.

A classic problem faced when assessing these symptoms in our patients with cephalgia is the frequency with which they appear in the general population and the fact that we have gradually identified over the years entities that present neurootological symptoms and may be associated with migraine, such as migraine associated recurrent vertigo (MARV), benign paroxysmal positional vertigo (BPPV), basilar-type migraine, neurological conditions with migraine and vertigo, the doubtful relationship with Meniere's disease, vestibular hypofunction and autonomic symptoms. Nonetheless, the real incidence of these nosological entities has not yet been clarified. An understanding of these may be helpful in the comprehensive treatment of patients and for assessing the pathophysiological aspects of these entities.

The present study of patients at a cephalgia unit seeks to assess the presence of neurootological symptoms in patients with migraine. More specifically, to delimit those conditions accompanied by vertigo, a feeling that objects are spinning, from those where the debut symptom is instability. In addition, and as an independent evaluation, we have asked patients about symptoms suggesting orthostatic hypotension. Following this approach, we wish to evaluate the following questions:

- What kinds of neurootological conditions can be found in patients with migraine?
- Are there any specific and non-specific classes of instability and vertigo in patients with migraine?
- How are the episodes expressed over time (inter-episodic or episodic) with respect to the patients' migraine?

Patients and methods

A total of 70 patients were selected consecutively from those referred to the cephalgia unit of the "San Carlos" University Hospital's Neurology Department if they met the diagnostic criteria of the IHS for episodic migraine with or without aura (IHS 1.1, 1.2.1)¹ during the months of January and April, 2008 (table 1). A specific analysis was made of the presence of instability, psychophysiological dizziness, presyncopal symptoms, BPPV, MARV, and Meniere's disease. All patients meeting the IHS-2 criteria for migraine with atypical aura, probable migraine or basilar-type migraine with aura were excluded.¹

Table 1 Demographic characteristics of the sample

	N	%	Age	SD	Range	F/ M
Without neurootological symptoms	28	40	38,4	11	18-62	27/ 1
With neurootological symptoms	42	60	36,6	10,1	17-60	35/ 7
MARV	10	14,2	35	6,1	25-40	7/ 3
BPPV	6	8,6	40,12	7,76	29-52	4/ 2
Instability	11	15,7	36,1	12,5	17-60	8/ 3
Presyncopal symptoms	31	44,3	37,5	9,2	17-60	31/ 0
Total	70		37,8	10,4	17-62	59/ 11

The diagnostic assessment was carried out on all patients by a specialist in neurology particularly interested in cepheas and neurootology. All patients were given a complete neurological examination and their full case history was recorded.

Cephalea

A complete case history was compiled and the neurological examination given included the palpation of tender points. For the diagnosis of migraine, the operational criteria for migraine with typical aura and without aura were strictly applied. Patients with different kinds of migraine other than dots (groups 1.1 and 1.2 of the IHS), meeting the criteria for probable migraine (1.6) and other kinds of cepheas were excluded. Patients were also excluded if they associated another type of headache (tension-type headache); patients with tender points were not excluded.

Neurootological symptoms

All patients were given a neurootological assessment in addition to a detailed neurological examination. The presence of spontaneous or positional nystagmus was assessed, the Hallpike-Dix manoeuvre was performed for BPPV, the hyperventilation test for the diagnosis of psychophysiological dizziness, the head-shaking manoeuvre to induce nystagmus in patients with vestibular hypofunction, dynamic versus static visual acuity and the Halmagyi-Curthoys kinetic-cephalic manoeuvre was applied for the assessment of the vestibulo-ocular system.

Within the group of patients selected, the diagnoses were reached as follows: instability was based on detailed anamnesis, excluding symptoms such as presyncopal sensation, elements suggesting an illusion of movement; psychophysiological dizziness was identified by anamnesis and the classical diagnostic technique based on the reproducibility of the symptoms with the hyperventilation test;² and the presence of chronic vestibular hypofunction was verified by the provocation of nystagmus with head-shaking, dynamic versus static visual acuity and the head-shaking test to identify corrective saccadic movements.

In patients with a clinical suspicion of Meniere's disease, an assessment was requested by a specialist in otorhinolaryngology.

BPPV was diagnosed using the Hallpike-Dix manoeuvre, requiring the provocation of symptoms and the presence of unilateral, ageotropic or horizontal nystagmus, with latency and fatigability.³

The diagnosis of MARV was based on the operational criteria published⁴ (table 2) and only those patients meeting the defined MARV criteria were included.

To complement these studies, a clinical assessment was made of the presence of presyncopal symptoms using highly indicative clinical information in the case history.

Results

In the end, 70 consecutive patients (11 men, 59 women) were selected as meeting the selection criteria. Their mean age was 37.8 years (range from 17 to 62 years). Twenty-eight patients did not report any symptom and their examination was normal. Neurootological symptoms were present in 38.5% of patients and 44.3% showed presyncopal symptoms (10 men, 32 women) (table 1).

The neurootological symptom most frequently observed is the presence of instability, which appeared in 15.7% of patients. The mean age was 36.1 years, with female predominance (8:3). Another 27% of patients were also associated with details suggesting presyncopal symptoms and one patient suffered MARV.

Table 2 Criteria for migraine associated recurrent vertigo applied in the present study

- A. Migraine meeting criteria 1.1 for migraine without aura or 1.2 for migraine with typical aura from the IHS
- B. At least five episodes of vertigo meeting the following characteristics C-H
- C. Duration between 5 minutes and 14 days
- D. Absence of hearing loss during the episodes
- E. Absence of tinnitus during the episodes
- F. The episodes are not triggered by head movements
- G. Absence of other neurological symptoms or signs during vertigo
- H. Not attributable to any other disorder

Source: Porta-Etessam J.⁴

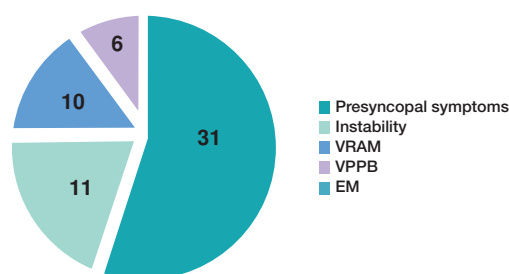


Figure 1 Distribution of neurootological conditions in the sample (n).

MARV appears defined in 14.2% of the patients with migraine, the crises were independent of their headache and all of them met the criteria for defined MARV. The mean age of this group was 35 years. Female dominance was observed (7:3). Of the patients with MARV, 70% reported presyncopal sensation during migraine attacks.

BPPV appears in 8.5% of patients with migraine with a positive Hallpike-Dix manoeuvre. The mean age was 42.12 years. Although there is a dominance of females (2:1), the ratio is lower than the female/male ratio for the series of patients. Two thirds of patients with BPPV associated a presyncopal sensation during migraine attacks.

Presyncopal sensation, recorded through specific questions, appears in 44.3% of patients. The mean age was 37.5 years. It was not present in any of the 8 males in the series.

MARV and BPPV appeared independently from headaches in all cases, whereas the instability symptoms formed part of the migraine crises except for one case presenting similar clinical signs between episodes.

Discussion

The results from our study show a high presence of neurootological symptoms in patients with migraine. As might be expected we have observed a considerable number of patients with presyncopal symptoms. This finding reflects the frequent alterations of autonomic systems suffered by patients with migraine.⁵⁻⁷ In addition to nausea and vomiting, orthostatism and syncope are common symptoms among our patients. We have been struck by the high percentage observed (44%), possibly due to the direct questioning about the same. The patients did not present this symptom between their migraine episodes; these findings speak to an autonomic dysfunction coinciding with migraine attacks and agrees with the findings observed in previous studies.⁷

Instability is an important consideration in migraine sufferers (fig. 1). In our series it was present in 17.5% of patients. The aetiological possibilities of this symptom are quite varied. The examination of patients between migraine episodes was normal and no clinical signs of vestibular hypofunction were observed. However, the first possibility in our opinion is a mild bilateral and reversible vestibular hypofunction during migraine attacks.⁸⁻¹⁰ This explanation would fit with prior studies revealing the presence of vestibular hypofunction data in migraine sufferers.^{2,8-10}

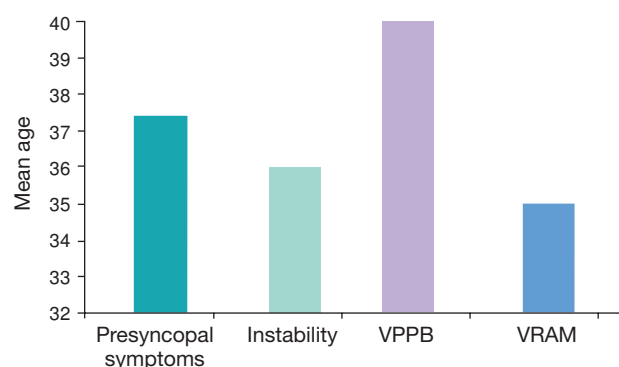


Figure 2 Distribution of Clinical syndromes by age.

Table 3 Pathophysiological approach to symptoms associated with migraine sufferers

	Specific	Non-specific
Inter-episodic	MARV	BPPV
Episodic	Vestibular hypofunction	Orthostatism

Psychophysiological dizziness was excluded using the hyperventilation manoeuvre and the involvement of other symptoms from one episode to another seems, in principle, less than plausible.^{2,11}

Another aspect that we have found interesting is the presence of inter-episode conditions. In this case, they occurred with an illusion of movement. A history of non-positional recurrent vertigo was found in 13% of our patients who met the criteria for MARV.^{4,12} From a pathophysiological approach, we feel that it must obligatorily share aspects with migraine. Both are recurrent and have a clinical expression that makes us think that part of the conditions “requires” central participation.^{4,12} In addition, a decline has been observed in its frequency with preventive treatment of migraine in some patients it remits with the administration of triptans.^{13,14}

Another interesting association, albeit difficult to justify in terms of biological plausibility, is that observed with BPPV. This entity appeared in 8% of patients. As is well known, BPPV is a more frequent kind of vertigo among elderly subjects, although an increased incidence has been observed in migraine sufferers.¹⁵⁻¹⁷ It has been classically justified by a theoretical ischaemia of the utricular system, but this approach seems inappropriate with current hypotheses about migraine. From our point of view, the increased incidence of BPPV in migraine sufferers must be justified in the same way as in other illnesses of the central nervous system where a higher incidence is observed (multi-system atrophy, viral neurolabyrinthitis, ...) and reiterated dysfunction of the otolithic system may possibly predispose to the release of otoliths.¹⁸⁻²⁰

Another noteworthy aspect is the influence of age (fig. 2). The presence of BPPV has been observed in elder patients (40 years of age), whereas MARV is an entity among younger ones (35 years of age). These findings are striking and

remind us that benign paroxysmal vertigo is a childhood entity and that age is a risk factor for BPPV.^{21,22}

Finally, it seems appropriate to have a nosological classification of the symptoms that would differentiate between inter-episodic and episode-related symptoms as well as specific and non-specific symptoms of migraine (table 3). This approach is of evident pathophysiological interest since both MARV and the possible vestibular hypofunction among migraine sufferers are symptoms sharing pathophysiological aspects with migraine, whereas the symptoms of orthostatism and BPPV are non-specific and are found in association with other entities.

Conflict of interest

The authors declare no conflict of interest.

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